The sealed radioactive source in the Micro – DMD

The Micro – DMD (µ - DMD) uses a radioactive nickel (Ni – 63) source to generate beta particles (electrons) within a sealed cell.

In nearly all countries it is essential to have a license to import, handle, store, use, transfer and dispose of a sealed radioactive source, just like for the NI-63 containing ECD.

The information that is needed to change or apply for a complete new license depends on local law.

Suggestions for license application is a license for ECD's is already present:

If we compare an ECD with this µ - DMD, the µ - DMD is

1. Also used as a detector in chromatography,
2. Also containing Ni – 63 and
3. Has 3 times lower activity per source compared to an ECD.

Investigate if it is possible to have the µ - DMD accepted under the present license for radioactive sources. If in your current license only the type of radionuclide is mentioned with the maximum activity per source, there is a possibility you don't need to change that license (note: as long as the maximum of that license is not reached with extra µ - DMD units).There is also the possibility that the license change procedure is simpler since µ - DMD contains three times less activity compared to an ECD.

In any case it is wise to contact the proper Authority to review how to handle this.

The table below shows all facts of the Ni – 63 source in the µ -DMD that might be relevant for license application:

Type of source	Sealed source (capsule in holder)
Capsule Type	Rolled Foil 6.3 mm x 1.3 mm x 5 um
Holder Type	Manifold
Isotope (radio nuclide)	Ni – 63 (also written as ^{63} Ni or Nickel 63)
Manufacturer Source	Isotope products Laboratories, CA
Amount of activity per source	185 MBq (equal to 5mCi)
Physical State of Source	Solid (deposited on one face of the foil)
Mass number Ni – 63	63
Atomic number Ni – 63	28
Half life Ni – 63	100.1 years
Energy of beta for Ni – 63 (average / max)	17 keV /67 keV
Minimum Specific Activity	555 GBq per gram
Type of decay	B (beta)
Progeny (Ni – 63 decays to)	Cu – 63 (stable not radioactive)
ISO – 2919 : 1999 Testing	Classification C32211
Maximum temperature source	180^0 C
ISO – 2919 : 1999 Radio Toxicity	Classification Group B, subgroup B2

With each µ - DMD a Source Data Sheet is supplied containing at least Source Number, ISO Classification, Activity and Reference date.

For more specific information you can contact the Radiation Safety Officer at Varian Middelburg:

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